Saving Lives Everyday!


# D500

## Monitor / Defibrillator

MEDIANA


**LCD**
Waveform & Text display

**colin** **NIBP**

**Temperature 1**

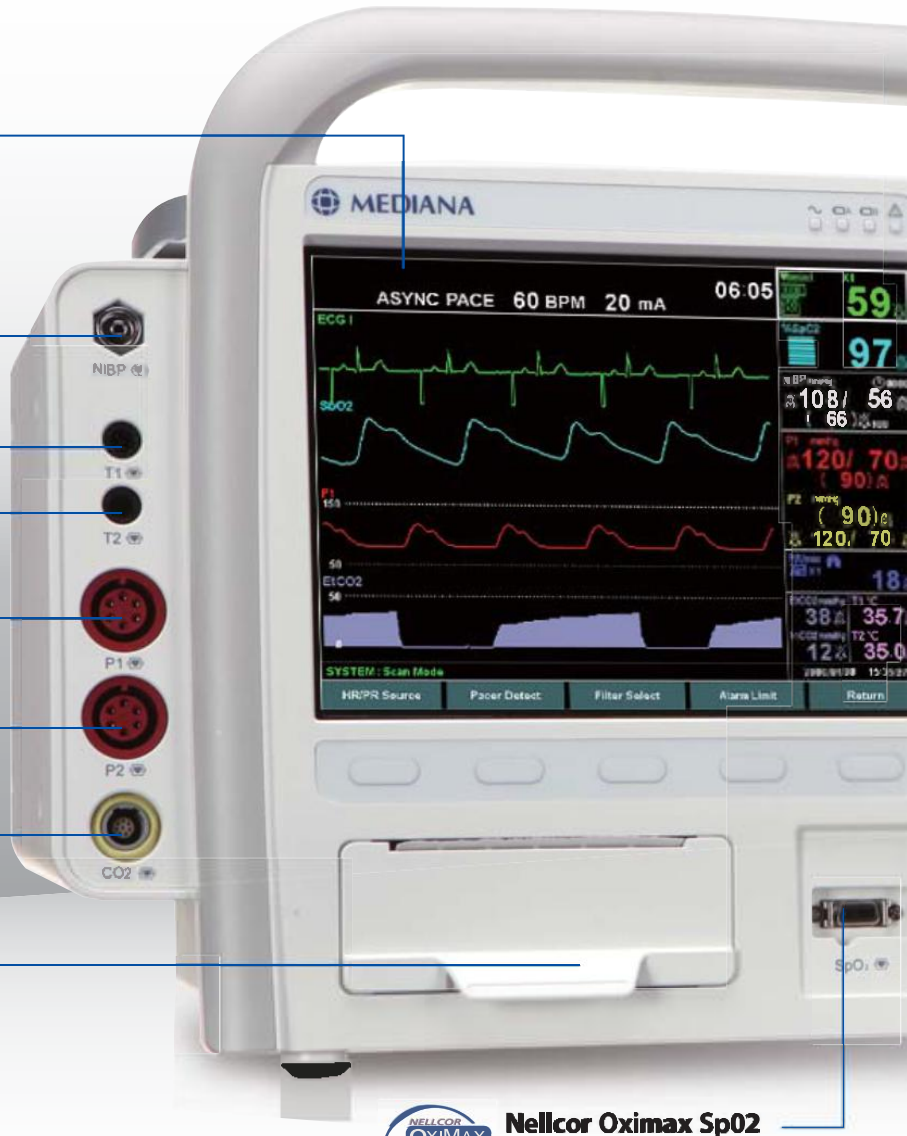
**Temperature 2**

**IBP 1**

**IBP 2**

RESPIRONICS
**Capnography**

**Integrated Thermal Printer**



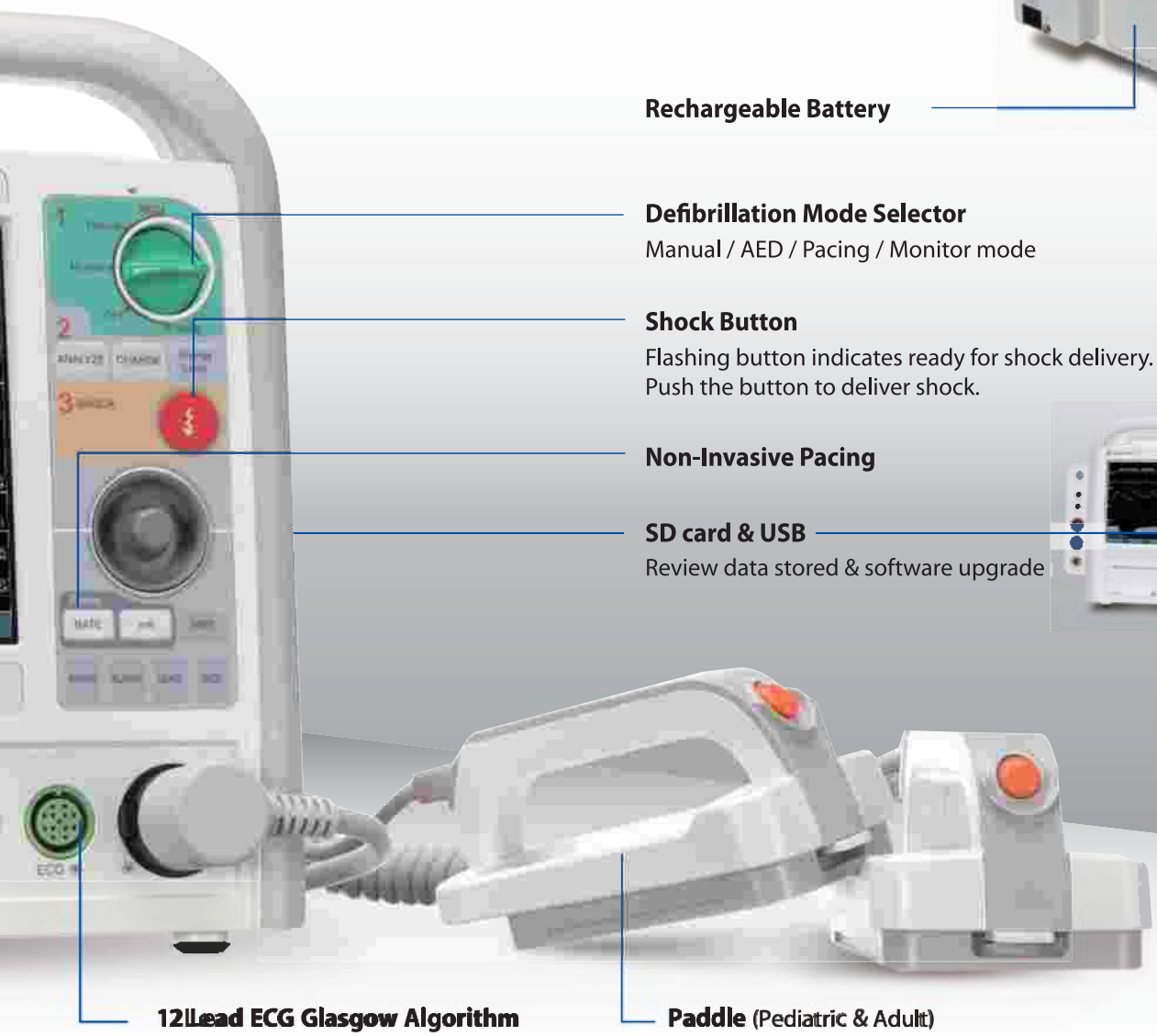

**Nellcor Oximax Sp02**
Pulse Oximetry

*Menu in multi-language : English, Spanish, Russian, German, Polish, French, Portuguese, Czechich, Italian

## Biphasic Defibrillation,
## Pacing and Complete Monitoring in one Portable Device.

- Multifunctional Defibrillator/Monitor
- Manual and AED Operation
- Non-invasive Pacing Mode
- Advanced Biphasic Technology
- Defibrillation with Paddles
- 12 Lead ECG Monitoring

**Rechargeable Battery**



**Defibrillation Mode Selector**
Manual / AED / Pacing / Monitor mode

**Shock Button**
Flashing button indicates ready for shock delivery.
Push the button to deliver shock.

**Non-Invasive Pacing**

**SD card & USB**
Review data stored & software upgrade

**12 Lead ECG Glasgow Algorithm**

**Paddle** (Pediatric & Adult)


### » Monitoring-12 Lead ECG Display

Full range of monitoring options available, including 3/5/12 Lead ECG (Glasgow University), Nellcor SpO2, Omron NIBP, IBP, Temp and Respironics EtCO2.

### » AED

Semi-Automatic AED mode with easy to follow step-by-step visual and audio instructions.

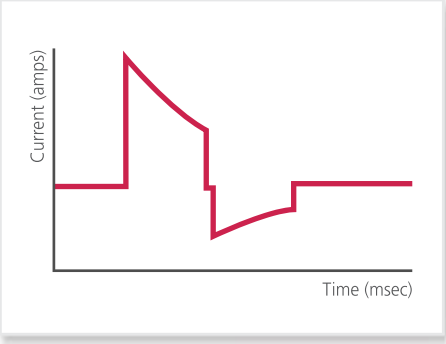
### » Manual Defibrillation

Biphasic Manual Defibrillation with maximum Energy level of 360 J.
With Synchronous Cardioversion.

### » Non-Invasive Pacing

Demand and Non-Demand Pacing modes with Pacing rates adjustable from 30 to 180 ppm.

## » Biphasic Waveform




Most effective Biphasic Truncated Exponential Waveform with impedence compensation. (25 to 175 Ohm)

## » Data Storage

Powerful memory for saving of numerical data and ECG, EtCO2 and IBP waveforms. Saves data for up-to 100 patients and 250 events.

## » Dual Battery

Dual Battery system with Automatic Switching. Each battery supports a minimum of 100 shocks and 5 hours operating time.

## » Integrated Thermal Printer

Device features an integrated Printer with 80 mm Paper Width that can print up to 3 Channels and Report / Patient information. 12 lead interpretive Analysis Report.

## » Paddle (Pediatric & Adult)

## » Pads

## » ECG Cables

# D500 Monitor / Defibrillator

Specification

## Display

Screen Size : 170.0*128 (mm) (8.4 in diagonally across the TFT-LCD screen)
Screen Type/Color: Liquid Crystal Display (LCD) Color
Resolution : 800*600 pixel

## Controls

Standard Knob; Mode key (Off, AED, Manual, Pacing and Monitor); 11 buttons (Shock, Select Energy Level, Charge, Analyze, NIBP, LEAD, Alarm, Size, Print, RATE, mA); 5 soft key

## Alarms

Categories : Patient Status and System Status
Priorities : Low, Medium and High Priorities
Notification : Audible and Visual
Setting : Default and Individual
Alarm Volume Level: 45 to 85 dB

## Physical Characteristics and Printer

**Instrument**

| | |
|---|---|
| Dimensions | 340*305*210 (mm) (W*H*D) including a battery excluding paddles, options and accessories |
| Weight | 6.16 kg including battery excluding paddles, options and accessories |

ECG: Type CF with defibrillation protection
SpO2: Type CF with defibrillation protection
Temperature: Type CF with defibrillation protection
EtCO2: Type CF with defibrillation protection
NIBP: Type CF with defibrillation protection
IBP: Type CF with defibrillation protection
Paddle: Type CF with defibrillation protection
Mode of Operation : Continuous

**Printer**

| | |
|---|---|
| Type | Thermal |
| Weight | 190g |
| Number of Channels | 1 to 3 channels |
| Paper Width | 80 mm |
| Printer Speed | 25 mm/s |

## Electrical

**Instrument**

Power Requirement AC Mains 100 to 240 V, 50/60 Hz, 60 to 160 VA
DC Mains 18Vdc, 7.0A with DC/DC adapter, Model: MDD150-1218
(MDD150-1218: Input: 12-16Vdc, 160VA, Output: 18Vdc, 7.0A)

**Battery (Option)**

| | |
|---|---|
| Type | Li-ion battery |
| Voltage | 14.4V / 6600mAh |
| Discharge | A minimum of 200 shocks at 200 Joules (per battery) |
| Operating Time | 5 hours (per battery) At the following condition: no printing, no external communication, no audible alarm sound and room temperature: 25°C |
| Recharge | 5 hours with D500 turned on/off |
| Dual Battery | Automatic Switching |

## Environmental Conditions

**Operation**

| | |
|---|---|
| Temperature | 0 to 50°C (32 to 122°F) |
| Humidity | 15 to 95% RH, non-condensing |
| Altitude | -170 to 4,877 m (-557 to 16,000 ft) |
| Water Resistance | IP34 |

**Transport and Storage (in shipping container)**

| | |
|---|---|
| Temperature | -20°C to 70°C (-4°F to 158°F) |
| Humidity | 15 to 95% RH, non-condensing |
| Altitude | -304 to 6,096m (1,000 to 20,000ft) |

## Defibrillator

Biphasic Waveform : Biphasic Truncated Exponential
Resuscitation Guidelines : Selectable AHA/ERC

**Manual Mode**

Shock Energy Level : External Paddles:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 300, 360J
Automatic Discharge Time : 60 seconds
Charging Time to 200J : Within 6 seconds with rated main voltage/DC main Voltage(battery Within 7 seconds)
Charging Time to 360J : Within 8 seconds with rated main voltage/DC main Voltage(battery Within 9 seconds)
Synchronous Cardioversion : Energy transfer begins within 60msec of the QRS peak

**AED Mode**

**1 ch ECG measurement**

| | |
|---|---|
| Lead | Lead II |
| Patient Impedance | 25 to 175 Ohm |
| Heart Rate | 20 to 300 bpm |
| Charging Time to 200J | Within 6 seconds with rated main voltage/DC main Voltage(battery Within 7 seconds) |

**Delivered Energy**

The D500 delivers shocks to load impedances from 25 to 175 Ohms. The duration of each pulse of the waveform is dynamically adjusted based on delivered charge, in order to compensate for patient impedance variation, as shown below;

| Load resistance (Ohm) | Delivered energy (Joule) |
|---|---|
| 25 | 203 |
| 50 | 198 |
| 75 | 200 |
| 100 | 199 |
| 125 | 198 |
| 150 | 197 |
| 175 | 197 |

## Pacer

| | |
|---|---|
| Pacing Mode | Demand or non-demand |
| Pacing rate | 30 ppm to 180 ppm |
| Resolution | 2 ppm |
| Accuracy | ±1.5ppm |
| Output current | 0 mA to 140 mA |
| Resolution | 2 mA |
| Accuracy | ± 5% or 5 mA |

QRS Marker : In the demand mode

## ECG

**Heart Rate**

| | |
|---|---|
| Measurement Rate | 0, 20 to 300 bpm |
| Resolution | 1 bpm |
| Accuracy | ±5 bpm |

**ECG (Electrocardiograph)**

| | |
|---|---|
| Leads | 3 / 5 / 12 Lead<br>Lead I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, Paddles, Pads |
| Lead Off Detection | Detected and displayed |
| Pacer Detection | Detected pacer pulses of ±2mV to ±700mV with pulse widths of 0.1 to 2msec and rise times 10% of width not to exceed 100msec |

**Input;**

| | |
|---|---|
| Input Impedance | 5 MΩhm or more |
| Input Dynamic Range | ±5mV AC, ±300mV DC |
| Voltage Range | ±0.5mV ~ ±5mV |
| Signal Width | 40 to 120 ms (Q to S) |

**Output (Frequency Response);**

| | |
|---|---|
| ECG Filter | 3/5 Lead; 0.5 to 21 Hz<br>0.05 to 40 Hz<br>1 to 21 Hz<br>12 Lead ; 0.05 to 40Hz<br>0.05 to 150Hz |
| ECG size | 5.0, 10.0, 15.0, 20.0, 30.0 mm/mV |
| Display Sweep Speeds | 25.0 mm/sec |
| Display Sensitivity | 10 mm/mV |
| Pacing Pulse Detection | On, Off |
| Electrode Disconnect Alarm | Display and/or sound |
| Common Mode Rejection (CMRR) | 90 dB or more |
| Defibrillator Discharge Recovery | less than 5 sec per IEC 60601-2-27 |
| Defibrillation Protection | Protected |

## Interpretive Algorithm

| | |
|---|---|
| 12-Lead Interpretive Algorithm | University of Glasgow 12-Lead ECG Analysis Program |

## Respiration

**IM Respiration**

| | |
|---|---|
| Technique | Impedence Pneumography |
| Range | 0,3 to 120 breaths/min |
| Resolution | 1 breaths/min |
| Leads | RA to LA |
| Base impedance | 500 to 2000 ohm |
| Delta impedance | 0.5 to 3 ohm |
| Lead Off Condition | Detected and displayed |
| Defibrillator Protection | Protected |

**AW Respiration**

| | |
|---|---|
| Technique | Non-dispersive Infrared Spectroscopy |
| Range | 0 to 150 breaths/min |
| Accuracy | ±1 breaths/min |
| Display Sweep Speeds | 25 mm/sec |

## NIBP

**Pulse Rate**

| | | |
|---|---|---|
| Pulse Rate Range | Adult/Pediatric | 40 to 200 bpm |
| | Neonatal | 40 to 240 bpm |

Resolution 5 bpm
Accuracy: ±2 BPM or ±2%, whichever is greater

**NIBP (Non-Invasive Blood Pressure)**

| | | |
|---|---|---|
| Technique | Oscillometric Measurement | |
| Measurement Modes | Off, cont, 1, 2.5, 3, 5, 10, 15, 30, 60, 90 minutes | |
| Measurement Range | Adult/Pediatric | |
| | SYS | 60 to 250mmHg |
| | MAP | 45 to 235mmHg |
| | DIA | 40 to 200mmHg |
| | Neonatal | |
| | SYS | 40 to 120mmHg |
| | MAP | 30 to 100mmHg |
| | DIA | 20 to 90mmHg |
| NIBP Accuracy | Mean error and standard deviation per ANSI/AAMI SP10:2002+A1:2003+A2:2006 | |
| Pressure Display Range | Adult/Pediatric | 0 to 300 mmHg |
| | Neonatal | 0 to 150 mmHg |
| Pressure Display Accuracy | Adult/Pediatric | ±10mmHg |
| | Neonatal | ±5mmHg |
| Initial Cuff Inflate Pressure | Adult/Pediatric | 120, 140, 160, 180, 200, 220, 240, 260, 280mmHg |
| | Neonatal | 80, 90, 100, 110, 120, 130, 140 mmHg |
| Automatic Cuff Protector | Adult/Pediatric: 300 mmHg<br>Neonatal: 150 mmHg | |
| Defibrillator Protection | Protected | |
| Measurement Speed | About 20 seconds | |

## IBP

**Pulse Rate**

| | |
|---|---|
| Pulse Rate Range | 20 to 250 bpm |
| Pulse Rate Resolution | 1 bpm |
| Pulse Rate Accuracy: | ± 1 % or ± 1 bpm |

**IBP (Invasive Blood Pressure)**

| | |
|---|---|
| Parameter Displayed | P1, ABP<br>P2, CVP, PAP, LAP |
| Measurement Range | -50 mmHg to 300 mmHg<br>20 bpm to 250 bpm |
| Resolution | 1 mmHg |
| Input Sensitivity | 5 µV/V/mmHg |
| Transducer Volume Displacement | 0.1 mm3/100 mmHg |
| Zero Calibration Range | ± 100 mmHg |
| Frequency Response | 25 Hz |
| Wave Size | 0 to 20, 0 to 50, 0 to 100, 0 to 200, 0 to 300, Auto Size |
| Display Sweep Speeds | 25.0 mm/s |
| Defibrillator Protection | Protected |

## SpO2

**Measurement Ranges**

| | |
|---|---|
| SpO2 saturation range : | 1% to 100% |
| Pulse rate range: | 20 to 300 beats per minute (bpm) |
| Perfusion range : | 0.03% to 20% |
| Display sweep speed : | 25.0 mm/s |

**Measurement Accuracy**

| | |
|---|---|
| Pulse rate accuracy | 20 to 250 beats per minute (bpm) ±3 digits |
| SpO2 saturation accuracy | 70% to 100% ±2 digits, neonates: ±3 digits |

Note: SpO2 saturation accuracy – De¬brillator/monitor measurements are statistically distributed; about two-thirds of de¬brillator/monitor measurements can be expected to fall in this accuracy (ARMS) range.
Reference the Clinical Studies section for test results. For a complete listing of SpO2 accuracy across the full line of available Nellcor™ sensors, contact Covidien, a local Covidien representative, or locate it online at www.covidien.com.

**Operating Range and Dissipation**

Red Light Wavelength Approximately :660 nm
Infrared Light Wavelength Approximately :900 nm
Optical Output Power:Less than 15 mW
Power Dissipation :52.5 mW

## Capnography

| | |
|---|---|
| Display | EtCO2, InCO2 |
| Range | 0 to 150 mmHg |
| Accuracy | 0 to 40 mmHg ±2 mmHg of reading<br>41 to 70 mmHg ±5% of reading<br>71 to 100 mmHg ±8% of reading<br>101 to 150 mmHg ±10% of reading |
| Display Accuracy | ±2 mmHg |
| Response Time | Mainstream: Less than 60ms<br>Sidestream: Less than 3sec |
| Gas Compensation | User selective at O2 > 60% and N2O > 50% |
| Warm Up time | 2 minutes maximum |
| Sound Noise Level | Less than 41 dB when ambient sound pressure level is 22dB |
| Sweep Speeds | 25.0mm/sec |

## Temperature

| | |
|---|---|
| Probe Types | Thermistor probe YSI compatible type |
| Parameter displayed | TEMP1, TEMP2 |
| Range | 0°C to 50°C (32°F to 122°F) |
| Resolution | ±0.1°C |
| Defibrillator Protection | Protected |

## Trend

| | |
|---|---|
| Data | 12lead, Events |
| Memory | 12 lead<br>saves ECG waveform, ECG analysis result data, ECG analysis date and time, HR/PR, NIBP, SpO2, Respiration, Temperature, IBP 1, IBP 2, EtCO2 numeric data, alarm condition<br>Event<br>saves total 250 data<br>saves defibrillation shock information (number of shock, energy level, actual passed energy, impedance), pacing information (pace rate, pace current, async mode), linical action list, 1 channel ECG waveform, Event date and time, HR/PR, NIBP, SpO2, Respiration, Temperature1, Temperature2, IBP 1, IBP 2, EtCO2 numeric data, alarm condition |
| Data storage | Internal memory, SD card |

## Optional Items

Non-invasive Blood Pressure with cuffs and cuff hoses
SpO2 (Nellcor) with DS-100A and DOC-10
12 Lead ECG with Interpretation from the University of Glasgow
Continuous Temperature Monitoring
EtCO2, selectable either Mainstream or Sidestream from Respironics
Invasive Blood Pressure Monitoring (2 lines)
Wi-Fi/3G Communication module
Wireless LAN data trans mission
Additional Battery

## Healthcare Solutions You Can Trust

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and selling state-of-the-art medical technology.
Our ultimate goal is to earn the trust of our customers by using
our imagination and skills to continuously offer better medical solutions.


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